A List of the Butterflies of Mt. Penrissen, Sarawak, with Notes on the Species.

BY R. SHELFORD.

The species here noted were obtained in May 1899, at elevations varying from 2,800 to 4,200 feet, and though I have no doubt that collecting at different times of the year would reveal the presence of a few more species, the present list may be regarded as fairly complete. Butterflies on Penrissen were not nearly so numerous as they are at all times of the year on the mountains near Kuching, Mts. Matang and Santubong; the very rank and dense jungle of Penrissen and the total absence of cleared spaces such as occur on the two latter mountains no doubt account for this comparative scarcity; at the same time it should be noted that the collection now described, contains several species which have never, in spite of the most careful and frequent collecting, been recorded from Matang and Santubong, and these species give quite a distinctive character to the collection. The insect fauna of a mountain possesses all the characteristics of an insular fauna consisting of

(1) widely ranging *low-country* species (comparable with the continental species of an insular fauna).

(2) species closely allied to, perhaps merely varieties of the above, but constant in their differences and mountain habitats.

(3) widely ranging *mountain* species of common occurrence on most mountains, of very rare occurrence in low-country, (comparable with insular species occasionally found on ther continental areas).

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* Novitates Zoologicae Vol. VI. No. 2 (1899) contains an interesting paper of the birds of the Galapagos Islands by Rothschild and Hartert the distribution of the species there recorded is closely parallel by the distribution of the insects of Bornean Mountains.

(4) purely local mountain forms. It is especially these last that give the distinctive character or—if I may be allowed the expression—the touch of local colour to a collection formed on *any* given mountain. The table of species of butterflies captured on Mts. Matang, Santubong and Penrissen given at the end of this paper will best illustrate the above-stated facts. I have prepared a similar table of the Longicorn beetles of the three mountains, which is equally suggestive.

Fam. *Nymphalidæ*.

Sub. fam. *Danainæ*.

(1) Hestia lynceus (Drury).

Both the typical form and the melanic variety which has been separated by Moore as a distinct species, *reinwardti*, were common at all elevations.

(2) Ideopsis daos (Boisd.)

(3) Danais (*Bahora*) *aspasia* (Fab.)

(4) Danais (*Parantica*) *borneensis* (Jenner Weir).

This species was described as belonging to the sub-genus Chittira, but seeing that the male has androconia on the lower median and submedian veins, it must fall into the sub-genus Parantica.

The species was very common and easily caught, as it generally flew with the slow flaunting flight so characteristic of the members of this "protected" sub-family. Also recorded by Dr. Hanitsch from Kina Balu.

(5) Danais (*Caduga*) *larissa* (Feld.)
Fairly common at all elevations. The Sarawak Museum collection contains also one example captured near Kuching.

(6) *Euplœa* (*Trepsichrois*) *mulciber* (Cram.)

(7) *Euplœa* (*Danisepa*) *lowei* (Butl.)

The males of this species are abundant throughout the whole of Borneo, whilst the females are extremely rare, on the other hand the females of *E. rhadamanthus* (Fab.), the continental topomorph of this species, are plentiful enough both in the Malay Peninsula and in Singapore. the reason of the relative differences in the number of the sexes in two such closely allied species is a problem not easy of solution, as, perhaps bearing indirectly on this problem it should be noted that ♀ *lowei* and ♀ *rhadamanthus* differ markedly from each other than do the ♂ ♂.

(8) *Euplœa* (*Tronga*) *crameri* (Lucas).

Sub. fam. *Satyrinæ.*

(9) *Mycalesis* (*Satoa*) *maianeas* (Hew.)

The only species of this large genus that was seen.

Sub. fam. *Elymniinæ.*

(10) *Elymnias lais* (Cram.)

The male mimics the Danaid. *D. larissa* (Feld.) the female mimics *Euplœa mulciber* (Cr.)

(11) *Elymnias?* sp. nov.

This species, whose nearest ally is *E. lutescens* (Butl.), is apparently new to science and will shortly be described in a forthcoming memoir on some mimetic insects from Bornec: it is a mimic of *Euplœa crameri* (Luc.) The Oriental mimetic *Elymniines* mimic their *Danaiinæ* models on the upperside only, the underside is "protectively" coloured and mottled, so that when at rest they are not easily seen; they furnish in fact an example of a double means of protection. (1) by mimicking distasteful butterflies (2) by simulating dead leaves. The first means of protection comes into play only when the insect is flying. The second only when the insect is at rest. Those species which mimic the distasteful *Pieridæ* do so on both the upper and under surfaces of the wings and thus have only the one means of protection.

Sub fam. *Amathusiinæ.*

(12) *Thaumantis odana* (Godt).

This handsome species was not uncommon up to an elevation of 3500 feet. It had an annoying habit of settling amongst the creepers of a very thorny rattan and it was no easy matter to procure a specimen.

Sub. fam. *Nymphalinæ.*

(13) *Cupha erymanthis* (Drury).

(14) *Atella sinha* (Kollar).

(15) *Atella alcippe* (Cram).

(16) *Terinos clarissa* (Boisd). Occurred round our hut (3,500 ft.)

(17) *Cynthia deione* (Erich). A very common species of the low country.

(18) *Cirrochroa orissa* (Feld).

(19) *Limenitis procris* (Cram). A common low-country species.

(20) *Athyma abiasa* (Moore).

(21) *Symphædra dirtea* (Fab).

(22) *Euthalia ambalika* (Moore).

(23) *Euthalia Whiteheadi* (Grose Smith). Also abundant on Matang.

(24) *Symbrenthia hypatia*, var. *hippocrene* (Staud).

(25) *Cyrestis nivea* (Zinken-Sommer).

(26) *Cyrestis? semi-nigra* (Grose Smith).

The description of this species previously recorded only fron Kina Balu is somewhat sparse, but I am nearly sure that my identification is correct, at any rate it would be unwise to describe the Penrissen specimens as a new species without a comparison with Mr. Grose Smith's types. The nearest ally of the species is *C. irmæ* Forbes

(27) *Chersonesia rahria* (Horsf and Moore).

Fam. *Lemoniidæ.*

Sub fam. *Nemeobiinæ.*

(28) *Zemeros albipunctata* (Butl.)

Fam. *Lycænidæ.*

(29) *Neopithecops zalmora* (Butl.)

One example with a white discal patch on the upperside of the forewing. Specimens, corresponding to the wet and dry season forms of this species in India, occur in Borneo, but occur quite independently of the season. A so-called wet season form may be captured in the S. W. monsoon and vice versâ; the same is also true of the Satyrid *Melanitis ismene* (Cram.); of this species the Sarawak Museum possess a long series of the typical form and another of the form *leda* (L.) captured in nearly every month of the year, and all within a radius of two miles of Kuching. The difference between the wet and dry seasons is not nearly so well-marked in Borneo as in India, and I imagine that the colouring of butterflies exhibiting seasonal changes is determined by the state of the weather during the early stages of the life history, so that a wet August (for example) would produce the wet-season form, a dry August the dry-season form: in Borneo, at least, these forms should rather be called weather-varieties, occuring as they do, independently of the seasons.

(30) *Cyaniris placidula* (Druce). Previously recorded from Kina Balu.

(31) *Cyaniris selma* (Druce).

Upperside-forewing, pale blue with a white discal patch and with broad black costal and outer margins. The cell is closed with a small black stigma. *Hindwing*, greyish blue, the cell is closed with a stigma. A marginal series of fuscous spots. *Underside*, exactly as in male.

(32) *Cyaniris strophis* (Druce).

(33) *Cyaniris planta* (Druce).

This species leads up to *C. haraldus* (Fab.) placed by some authors in a separate genus—*Lycænopsis.*

(34) *Nacaduba* sp?

A couple of females only were taken, and though I am strongly of opinion that they will constitute a new species. I defer a description until I can procure a male. The colouration and markings are much the same as in *N. aluta* (Druce.) but there is no basalband on the underside of the forewing as in that species.

(35) *Arhopala similis* (Druce).

This is the variety a of *A. agesiase* (Hew.)

(36) *Tajuria isaeus* (Hew.)

(37) *Biduanda* sp? (Nov.)

I am pretty confident that this species of which one female example was taken, will prove to be new, but I must defer a description of it until I can obtain access to larger collections and more recent literature. The species appears to be related on the one hand to *Biduanda thesmia* (Hew.), on the other to *Biduanda lawitsoni* (Druce.), judging at least by the pattern of the wings on the underside. If ever the phylogeny of the *Lycanidæ* comes to be traced, the wing patterns on the underside must carefully be taken into consideration; from a study of these, extending over three years, I have come to the conclusion that the more highly organised the butterfly, the more the underside wing-pattern tends to disappear from the discs of the wings and concentrate at the margins and at the anal angle of the hind-wing, in some cases disappearing even from these areas, as for example in Bornean examples of *Loxura atymmus.* A reason for this concentration of wing-pattern may perhaps be sought in the following considerations:—the typical *Lycænid* wing-pattern on the underside is that presented by such genera as *Nacaduba. Lampides. Cyaniris. Catachrysops*, consisting of catenulated bands or bands and spots crossing the discs of the wings in a more or less definite manner, at the anal angle of the hindwing is almost invariably present a conspicuous eye-spot: this eye-spot is supposed (and there is evidence to justify the supposition) to direct the attacks of enemies such as birds or lizards to a non-vital part of the body, the eye-spot being highly conspicuous when the butterfly is at rest (the bright patches of colour at the tips of the forewings of soberly coloured butterflies of other families is supposed to serve the same purpose ; cf. also the Orange Tip of Europe). Now if the pattern disappears from the discs of the wings, this eye-spot, which by the way may degenerate into a mere patch or streak of bright colour, becomes still more conspicuous and consequently of greater value to the butterfly, whilst the risk of the main body of the wings proving a source of attraction to enemies is now much lessened, seeing that they are unornamented : in *Loxura atymnus* the absence of eye-spot is compensated for by the long tails into which the hind wings are drawn out. The axiom then with which this short dessertation commenced that the more highly organised the *Lycænid* the more the underside wing-pattern concentrates outwardly, seems to follow naturally on the more general axiom, that the more highly organised the animal, the more diverse and complete are its methods of defence. The species under notice is of interest as affording a glimpse of the manner in which the diffuse wing-pattern of *Biduanda thesmia* (Hew.) may become outwardly concentrated as in *B. hewitsoni* (Druce).

Fam. *Pieridæ*. Sub. fam. *Pierinæ*.

(38) *Delias eumolpe* (Grose Smith).

♀ *upperside* Black. *Forewing* with a large white oblique spot closing the cell and extending somewhat above and below it ; *Hindwing* with a large discal area whitish dusted with ochreous and black scales. *Underside*, *Forewing*, black, cell-spot as above. A marginal row of spots, the upper yellow and the larger, the lower white, the last being bifid. *Hindwing* as in male but the discal yellow area much reduced. Expanse 88mm.

This sex is described here for the first time. The species which was originally described from Kina Balu is not mentioned by Dr. Butler in his recent revision of the genus Delias (Ann. Mag. N. H 16. vol. 20., Aug. 1897).

(39) *Delias Singhapura* (Wall).

(40) *Delias cathara* (Grose Smith). Exactly mimicked by a *Chalcosiid* moth. *Mimeuplœa pieroides* Wlk.

(41) *Delias parthenia* Staud. Previously recorded from Kina Balu.

(42) *Terias hecabe* (L.) Common everywhere.

(43) *Catophaga (Hyposcritia) plana* (Butl).

(44) *Catophaga* (*Tachyris*) *cardena* (Hew).

(45) *Huphina hespera* (Butl.) This form has recently been separated from H. lea (Doubl.)

Sub. fam. *Papilioninæ.*

(46) *Troides brookianus* (Wall.)

(47) *Troides helena cerberus* (Feld.)

(48) *Papilio demolion* (Cr.)

(49) *Papilio nephelus saturnus* (Gir.)

(50) *Papilio paradoxus telesides* (Feld.)

(51) *Papilio arpina carnatus* (Rothschild and Ford).

Fam. *Hesperidae..*

(52) *Tagiades waterstradti* (Elwes).

(53) *Telicota bambusae* (Moore).

(54) *Notocrypta feisthamelii* (Boisd.)

(55) *Parnara moolata* (Moore).

(56) *Hasora chabrona* (Plötz).

Table of Species of Butterflies Occurring on Mounts Matang, Santubong and Penrissen.

	Matang.	Santubong	Penrissen
Nymphalidæ-Danainæ.			
Hestia lynceus, Drury	—	—	—
Tirumala septentrionis, Butl.	—		
Parantica crowleyi, Jenner-Weir			—
Caduga larissa, Feld.			—
Adigama scudderi, Butl.	—		
Penoa menetriesii, Feld.	—	—	
Trepsichrois mulciber. Cr.	—	—	—
Danisepa lowi, Butl.		—	—
Salpinx leucostictos, Gm.	—		
Isamia ægyptus, Butl.	—		
Satyrinæ.			
Satoa maianeas, Hew.			—
Neorina lowi, D. & H.	—		
Ypthima pandocus, Moore	—	—	—
Amnosia baluana, Fruhst.	—		
Elymniinæ.			
Elymnias aroa sp. n.			—
,, lais, Cr.	—	—	—
Amathusiinæ.			
Thaumantis odana, Godt.			—
,, aliris, Westw.	—		
Clerome stomphax, Westw.	—	—	
Xanthotænia busiris, Westw.	—	—	
Nymphalinæ.			
Euripus halitherses, D. & H.	—		
Cupha erymanthis, Drury			—

	Matang	Santubong	Penrissen
Atella alcippe, Cr.			
,, sinha, Kollar.	—		—
Terinos clarissa, Boisd.			—
Cynthia deione, Erichs	—	—	—
Neptis dindinga, Butl.	—	—	
,, miah, Moore	—		
,, anjana, Moore	—		
Cirrochroa malaya, Feld.	—		
,, orissa, Fab.	—		
Stibochiona persephone, Staud.	—		
Pandita sinope, Moore	—	—	
Limenitis daraxa, D. & H.	—		
,, procris, Cr.		—	—
Euthalia vacillaria, Butl.	—		
,, ambalika, Moore	—		—
,, ? magnolia, Staud.	—		
,, lavernalis, de N.		—	
,, merta, Moore	—		
,, garuda, Moore	—		
,, adonia, Cr.	—		
,, whiteheadi, G. Smith	—		—
Tanæcia ellida, Staud.		—	
,, valmikis, Feld.	—	—	
,, lutala, Moore		—	
Athyma abiasa, Moore	—	—	—
,, euloca, sp. n.	—		
,, nefte, Cr.	—		
,, amhara, Druce	—		
Symphædra dirtea, Fab.			—
Symbrenthia hypatia	—		—
var. hippocrene, Staud			
Cyrestis seminigra, G. Smith			—
,, rahria, Moore	—	—	
Eulepis jalysus, Feld.		—	
Charaxes distanti, Honr.	—		

	Matang	Santubong	Penrissen
Lemoniidæ.			
Zemeros albipunctata, Butl.			—
,, emesioides, Feld.	—	—	
Dodona elvira, Staud.	—		
,, deodata, Hew.		—	
Abisara kausambi, Feld.	—		
,, savitri, Feld.	—		
Lycænidæ.			
Paragerydus pyxus de, N.	—		
,, contestus sp. n.	—		
Allotinus subviolaceus, Feld.	—		
Logania staudingeri, Druce	—		
Cyaniriodes libna, Hew.	—		
Simiskina pharyge, Hew.	—		
Neopithecops zalmora, Butl.	—		—
Cyaniris puspa, Horsf.		—	—
,, placida, Moore	—		—
,, placidula, Druce	—		—
,, ? transpectus, Moore	—		
,, lugra, Druce	—	—	
,, selma, Druce			—
,, strophis, Druce			—
,, plauta, Druce			—
,, haraldus, Feld.	—		
Lycenæsthes lycænina, Feld.	—		
,, emolus, Godt.		—	
Luthrodes mindora, Feld.	—		
Nacaduba pavana, Horsf.	—	—	
,, sp. ...			—
,, hermus, Feld.		—	
,, ardates, Moore	—	—	
,, atratus, Horsf.	—	—	
,, berœ, Feld.		—	
,, ? ancyra, Feld.		—	
Lampides coruscans, Moore	—		

	Matang	Santubong	Penrissen
Castalius ethion, D. & H.	—		
Iraota rochana, Horsf.	—	—	
,, nila, Dist.	—	—	
Arhopala centaurus, Fab.	—		
,, borneensis. Druce		—	
,, fulgida, Hew.	—	—	
,, similis, Druce			—
,, capeta, Hew.		—	
Curetis malayica, Feld.		—	
Dacalana vidura, Horsf.	—	—	
Pratapa lucidus, Druce	—		
,, devana, Druce	—	—	
,, calculis, Druce	—	—	
Aphnæus lohita, Horsf.	—		
Tajuria mantra, Feld.		—	
,, isaeus, Hew.			—
,, donatana de, N.	—	—	
,, travana, Hew.	—		
Britomartis sp.		—	
Purlisa giganteus, Dist.	—		
Chliaria skapane, Druce	—		
,, minima, Druce	—		
Mantoides licinius, Druce		—	
Neocheritra amrita var. theodora, Druce		—	
Horaga corniculum, Druce	—		
Semanga superba, Druce	—		
Biduanda sp.			—
Drina maneia, Hew.	—		
Lehera anna, Druce	—	—	
Araotes lapithis, Moore		—	
Deudorix epijarbas, Moore	—	—	
,, staudingeri, Druce		—	
,, strephanus, Druce	—	—	
,, diara, Swinh.	—		
Rapala abnormis, Elwes	—	—	

	Matang	Santubong	Penrissen
Bindahara phocides, Fab. ...		—	
Virachola smilis Hew. ...	—	—	
Liphyra crassolis Westw. ...	—		
Fam. Papilionidæ			
Sub. fam. Pierinæ			
Delias metarete, Butl. ...	—	—	
,, singhapura, Wall. ...	—	—	—
,, cathara, G. Smith ...			—
,, parthenope, Wall. ...		—	
,, parthenia, Staud. ...			—
,, hermione sp. n. ...	—		
,, eumolpe, G. Smith ...			—
Prioneris vollenhovii, Wall. ...	—		
,, cornelia, Vollenh. ...	—		
Terias nicobariensis, Feld. ...	—	—	—
,, sari, Horsf. ...	—		
Dercas gobrias, Hew. ...	—	—	
Catophaga plana, Butl. ...	—	—	—
,, distanti, Butl. ...	—		
,, cardena, Hew. ...	—	—	
Huphina hespera, Butl. ...	—	—	—
Sub. fam. Papilioninæ ...			
Troides brookianus, Wall. ...			—
Troides helena cerberus, Feld. ...	—		—
,, amphrysus flavicollis Druce ab. ruficollis ...		—	
Papilio demolion, Cr. ...			—
,, helenus palawanicus, Staud.		—	
,, iswara, White ...	—	—	
,, fuscus prexaspes, Feld. ...		—	
,, slateri hewitsonii, Westw.	—		
,, paradoxus telesicles, Feld.	—		—
,, caunus mendax, Rothsch.	—		
,, arjuna carnatus, Rothsch.	—	—	—

	Matang	Santubong	Penrissen
Papilio nephelus saturnus, Guer.			—
,, payeni brunei, Fruhst. ...	—		
,, bathycles bathycloides, Honr. ...	—		
,, macareus macaristeus, G. Smith. ...	—		
,, sarpedon L. ...		—	
,, agamemnon L. ...		—	
Fam. Hesperidae.			
Charmion ficulnea, Hew. ...	—		
Odina hieroglyphica, Butl. ...	—		
Tagiades waterstradti, Elwes. ...	—	—	—
Koruthaialos hector, Wats. ...	—		
Gangara thyrsis, Fab. ...	—		
Plastingia fruhstorferi, Mab. ...	—		
Notocrypta feisthamelii, Boisd...			—
Telicota augias L. ...	—	—	
,, bambusæ, Moore ...	—	—	—
,, palmarum, Moore ...	—		
,, dara, Kollar ...		—	
Halpe zema, Hew.	—		
Parnara moolata, Moore ...			—
,, guttatus, Brem. & Grey	—		
,, contigua, Mab. ...		—	
Hasora chabrona, Plotz. ...	—	—	—
Hasora borneensis, Elwes ...	—		
,, chuza, Hew.		—	
Badamia exclamationis, Fab. ...	—		
Rhopalocampta crawfurdi, Dist...	—		